AMSAT News Service Weekly Bulletins
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Posted: Tue, Feb 6, 1990 9:57 AM GMT Msg: KGJA-4161-8061
From: CDUNCAN
To: is
CC: w1aw
Subj: ANS$037

SB ALL @ AMSAT $ANS-037.01
MICROSAT CHECKOUT PLAN DETAILED

HR AMSAT NEWS SERVICE BULLETIN 037.01 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 6, 1990
TO ALL RADIO AMATEURS BT

Microsat engineer Harold Price, NK6K, reported last week to the 75 meter U. S. West Coast AMSAT net on current priorities for check-out, delivery, and release of the four microsats, AO-16, DO-17, WO-18, and LO-19.

Since the auto-iris in the WEBERSAT-1 camera is the only moving part on any of the microsats, WO-18 is being prepared for payload operation first. The iris is not expected to fail anytime soon, but its lifetime is limited and the team desires to get WEBERSAT- 1 into the picture taking business as soon as possible. Following the upload of improved battery management routines (which have also been placed on PACSAT-1 and LUSAT-1), the first camera control and picture taking software upload is expected early in the week of February 5. A release of the ground processing software for these pictures, known internally as "WEBERWARE 1.0" is expected soon. Picture data will be assembled from files captured during WEBERSAT-1 passes, so, even in the temporary absence of display software, ground users may capture data files from satellite transmissions for later processing.

It has been announced that WEBERWARE may have real color display, i.e., the oceans in the processed pictures will be blue and the dirt brown. Volunteer programers at Weber State University have had good results using a VGA monitor for the display.

/EX
SB ALL @ AMSAT $ANS-037.02
SATELLITE STATUS PART-1

HR AMSAT NEWS SERVICE BULLETIN 037.02 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 6, 1990
TO ALL RADIO AMATEURS BT

PACSAT-1 experienced a software crash on 31 JAN 90 and was subsequently reset. Indications are that AO-16 is in perfect physical health. Check-out software has been reloaded and all appears to be functioning normally. Software problems and occasional resets for a variety of possible reasons are to be expected during the early qualification and operational period of the microsats.

Since PACSAT-1 and LUSAT-1 are observed to be in good condition, only the improved battery and power management software has been uploaded to them. Serious effort on the packet bulletin board software will follow shortly as allowed by mission operational priorities.

DOVE-1 is in the best condition of all. The two meter transmitter on DO-17 is, because of its lower frequency, more efficient than the 437 MHz transmitters on

the other microsats. This means that battery management is simplest on DOVE-1. Since it is observed to be in such good condition, advanced software and digitalker files will be uploaded to it last after the other microsats have completed thorough memory tests and are well understood. Expect payload operations from DOVE-1 in mid to late February. For technical reasons, the DO-17 S-band BPSK transmitter will be used for intermediate software loading. Those with S-band receive capability are invited to listen in.

DOVE-1 and WEBERSAT-1 are intended to be, in general, transmit-only satellites. Neither has a receiver on its transmit frequency. AMSAT therefore asks that users refrain from attempting to transmit to or connect with these satellites on frequency. Such attempts only cause QRM to other listeners.

/EX
SB ALL @ AMSAT $ANS-037.03
SATELLITE STATUS PART-2

HR AMSAT NEWS SERVICE BULLETIN 037.03 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 6, 1990
TO ALL RADIO AMATEURS BT

Week two at AMSAT Satellite Factory has been just as busy for the Engineering team as the first week. Because the Microsats had a very short design cycle, priority had to be placed on getting the hardware and bootstrap software operational. The higher level software is being refined and these next few weeks should provide the software team the time required to upload and test the new software.

UO-14 continues to be performing well as the AMSAT-UK team at the University of Surrey progresses with its spacecraft check-out. UO-15 is remaining stubbornly silent and the Engineering team at Surrey is evaluating the situation. Any reports of signals from the UO-15 spacecraft should be forwarded immediatly to AMSAT-UK at the University of England.

The launch of the six amateur satellites has created a ground swell of interest. In a single day, AMSAT sold in excess of 80 tracking programs. Scores of "Press Kits" have been sent to the media. Reports from AMSAT net controls have indicated a marked increase in net participation, by previous AMSAT members who's interest has been "reborn" by the launch and newcomers to the Amateur Satellite game.

/EX
SB ALL @ AMSAT $ANS-037.04
NEW TRANSPONDER SCHEDULE FOR AO-13

HR AMSAT NEWS SERVICE BULLETIN 037.04 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 6, 1990
TO ALL RADIO AMATEURS BT

AMSAT OSCAR-13 Transponder Schedule (valid until May 09)

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        Mode-B  : MA 000 to MA 165
        Mode-JL : MA 165 to MA 195
        Mode-S  : MA 195 to MA 200     BLON = 207.1 degrees
        Mode-BS : MA 200 to MA 205     BLAT = + 2.9 degress
        Mode-B  : MA 205 to MA 256
        Omnis   : MA 240 to MA 060
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From 21 Feb 90 to 21 Mar 90 there will be an OFF period from MA 20 to MA 90 due to solar eclipses affecting AO-13. The length of the eclipses varies from 12 to 89 minutes. During the Mode-S period from MA 195 to MA 200, only the Mode-B beacon will be operational. Optimum squint angle occurs around

MA 200.

/EX
SB ALL @ AMSAT $ANS-037.05
BALLOON LAUNCH RECHEDULED

HR AMSAT NEWS SERVICE BULLETIN 037.05 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 6, 1990
TO ALL RADIO AMATEURS BT

A weather balloon carrying Amateur Radio equipment is scheduled for deployment on Saturday 10 FEB 90 at 9:00 CST. It was originally scheduled for the previous weekend, but bad weather postponed the flight for one week. The launch will be from Lawrence, Kansas. When the balloon reaches 85,000 feet, its theoretical maximum height, it should have a 450 mile radio range centered around the Kansas City area.

This balloon will have two amateur radio experiments on board: an ATV beacon transmitting on 439.25 MHz (Horizontal polarization) and a Voice ID beacon on 144.34 MHz FM (Vertical polarization). An HF net will be activated on 7.155 MHz to solicit reports. Send QSL reports to: Mike Bogard KD0FW - 2128 S. Norton Ave.,Independence, MO 64052.

/EX
SB ALL @ AMSAT $ANS-037.06
PRE-LAUNCH STS 36 KEPLARIAN ELEMENTS

HR AMSAT NEWS SERVICE BULLETIN 037.06 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 6, 1990
TO ALL RADIO AMATEURS BT

Aviation Week reports that the next shuttle flight, DOD STS-36, will go into a 62 deg inc, 110 x 110 nm orbit. Current launch time is 16-Feb-90 1:21 AM EST. This will be the lowest altitude and highest inclination operational orbit to date. Estimated keplerian elements are:

Satellite	STS-36
Catalog Number	90010
Int Des	1990 910A
Epoch	90 47.32395131 02/16/90 0746:29 UTC
Drag	0.00100000 Rev/Day^2
Element Set	1
Inclination	62.0000 Deg
RAAN	144.7666 Deg
Eccentricity	0.0000000
Mean Anomoly	360.0000 Deg
Mean Anomoly	0.0000 Deg
Mean Motion	16.25824035 Rev/Day
Epoch Revolution	1
Semimajor Axis	6581.88 Km
Period	88.57 Min
Apogee	203.72 km 126.59 sm 110.00 nm
Perigee	203.72 km 126.59 sm 110.00 nm

/EX

Posted: Tue, Feb 6, 1990 10:49 AM GMT Msg: LGJA-4161-8174
From: CDUNCAN
To: is
CC: w1aw
Subj: ANS$037, last three bulletins

SB ALL @ AMSAT $ANS-037.07
LAUNCH OF JAS-1B IMMINENT

HR AMSAT NEWS SERVICE BULLETIN 037.07 FROM AMSAT HQ
SILVER SPRING, MD FEBUARY 6, 1990
TO ALL RADIO AMATEURS BT

JARL Reports The Launch Of JAS-1B Set For Febuary 7, 1990

AMSAT-NA President and General Manager, Doug Loughmiller (KO5I) has been informed by JARL President Shozo Hara (JA1AN) that the launch of the JAS-1B amateur radio satellite is now set for Febuary 7, 1990 with the launch window opening at 01:25 UTC and closing at 02:00 UTC. After JAS-1B is successfully placed into orbit, it will be commissioned FUJI-OSCAR-20.

Like its predessor, FO-12, JAS-1B will be a space-borne digital store-and-forward packet BBS using mode JD, and it will also carry a Mode JA linear transponder for SSB communication. The mailbox feature will require a PSK modem and a TNC-2 using AX.25 link level protocol at 1200 baud. There will be two downlink telemetry beacons on JAS-1B. The first one will be for Mode JA at 435.795 MHz and it will send CW or PSK with an output power of 100 mW. The second telemetry beacon will be a Mode JD beacon and will have a downlink frequency of 435.910 MHz. The Mode JD beacon will send PSK packets and will have an output power of 1 Watt. The planned trajectory will place JAS-1B into a high inclination circular orbit. The altitude will be about 1200 km with an inclination of 99 degrees. This will give JAS-1B an orbital period of 103 minutes.

For additional details about this launch, please stay tunned to AMSAT HF/VHF Nets and ARRL Bulletins. As soon as an orbital element set is available for FO-20, it will be posted to the AMSAT/DRIG BBS at (214) 394-7438. For those who would like further technical details about JAS-1B, see the QEX article in the September '89 issue.

/EX
SB ALL @ AMSAT $ANS-037.08
UO-15 NEEDS YOUR HELP!

HR AMSAT NEWS SERVICE BULLETIN 037.08 FROM AMSAT HQ
SILVER SPRING, MD FEBUARY 6, 1990
TO ALL RADIO AMATEURS BT

University of Surrey Requests Satellite User's Help For UO-15

Following the last reported reception of signals from UO-15 at around 05:00 UTC on 23-JAN-90, nothing has been heard from the satellite -- despite continued attempts by University of Surrey (UoS) Engineering Team to activate redundant on-board systems. While UoS will continues to explore redundant paths and configurations available on the satellite, the time has come to investigate whether the spacecraft has suffered a major malfunction.

It should be possible to resolve this question by listening for residual signals from the on-board local oscillators (to confirm the operation of the power systems) and any very low-level signals at the nominal downlink frequency (indicating a transmitter or antenna problem). If signals from either the local oscillators or the transmitter can be detected, then there are several tests that can be done to trace the nature and extent of the problem.

UoS would be most appreciative of any assistance in the above listening tests. The level of local oscillator signals present at the spacecraft antenna were measured before launch to be -60 dBm. Examination of the link budget associated with the above experiments shows that large antennas and sensitive, narrow-band receivers operating in the 132-136 MHz (local oscillators) and

435.120 MHz (downlink transmitter) will be required to stand any chance of success. It is recommended that tests first confirm the detection of local oscillator signals from the operational UO-14 before attempting to listen for UO-15.

It is also very important that we narrow the window between the last reported reception of UO-15 at 05:00 UTC on 23-JAN-90 and first AOS (or lack therof) at UoS at 10:00 UTC the same morning. Was anyone else listening? Telemetry would be ideal, but even a report of the presence of a signal from UO-15 on 435.120 MHz would help enormously.

If anyone can help (or suggest contacts who may be able to help) - please contact Martin Sweeting G3YJO at UoSAT. Let us all hope that we can yet find our way back!

73 Martin Sweeting G3YJO

/EX
SB ALL @ AMSAT $ANS-037.09
AMSAT 10M NET CHANGES TIME

HR AMSAT NEWS SERVICE BULLETIN 037.09 FROM AMSAT HQ
SILVER SPRING, MD FEBUARY 6, 1990
TO ALL RADIO AMATEURS BT

AMSAT 10 Meter Novice & Technican Net Changes to Saturdays at 15:00 UTC

In a move designed to help more Novices and Technicians join the fun on OSCAR satellites, Vinny Banville (WB2YBA) and Wray Dudely (W8GQW) have decided to move the Novice & Technican AMSAT from Sundays at 19:00 UTC to Saturday mornings at 15:00 UTC. The Net call up frequency will remain the same: 28.460 MHz. This change will become effective on February 10, 1990. The 10M HF Net is designed to help beginners get the basic information needed to work the OSCAR satellites. All are welcome to join.

/EX

Posted: Sat, Feb 3, 1990 5:47 AM GMT Msg: HGJA-4157-6582
From: HPRICE
To: amsat
Subj: telemetry resend

Hopefully starting tonite, WEBER telemetry will be changed to the following format:

WEBER-1>TIME-1:PHT: uptime is 050/15:03:59. Time is Sat Feb 03 04:34:39 1990

WEBER-1>TLM:21:76 22:70 23:4D 24:3F 25:34 26:00 27:00 28:00 29:00 2A:00 2B:00
2C:00 2D:2D 2E:00 2F:9F 30:9E 31:9F 32:93 33:34 34:A6 35:A6 36:B4
37:A3 38:D2 39:B3 3A:9F 3B:8C 3C:B7 3D:EA 3E:47 3F:D3 40:9C 41:9D
42:D2
25CA48BD

WEBER-1>TLM:00:76 01:77 02:5E 03:84 04:74 05:93 06:72 07:85 08:6C 09:34 0A:A3
0B:A5 0C:CC 0D:B9 0E:08 0F:70 10:AD 11:8D 12:06 13:68 14:A5 15:9F
16:89 17:86 18:83 19:8A 1A:83 1B:88 1C:84 1D:8E 1E:26 1F:5F 20:99
25CA48BD

The two telemetry frames are reversed (to make the s/c software easier to write, it has no other significance). More importantly, the 8 digit hex number on the end is the time when the telemetry scan was made. The time value is that returned by the C time() function on an IBM-PC, i.e., seconds since Jan 1, 1970. It serves to timestamp each block of data,

and ties two blocks together.

It is separated from the rest of the data in the block by a 0x0d.

A word on how the telemetry is gathered.

At the start of an interval, the "uptime" message is generated, then
the telemetry routine is called. The new timestamp number is then
grabbed. Next, all the telemetry values are gathered, in order.
This process involves sending 2 bytes at 4800 baud on the internal
serial buss, plus waiting 9ms for each value. In addition, each of the
12 current samples takes an additional 100ms. As you can see, with this
initial telemetry routine, two values at opposite ends of the array
can be separated in time by almost 2 seconds. Both output frames that
were generated by one scan are stamped with the same time, however.

The other spacecraft will be changed as they are uploaded with the
latest battery management routines.

hp

Posted: Sun, Feb 4, 1990 1:17 AM GMT Msg: KGJA-4160-4101
From: HPRICE
To: amsat
Subj: Pacsat telemetry change

In addition to the changes detailed for WEBERSAT yesterday, the new
timestamp will also be added to the status line. PACSAT will be the
first to receive this software upload, along with the latest battery
routines.

You should, by the way, be seeing the batteries at a higher voltage,
Bob is trying to keep them topped off, where the top is defined as
11.81V - 0.0216*Battery_temp.

A word about changes. The telemetry formats, and the format of other
microsat data, such as the WEBERSAT image format, are subject to
change. Sometimes it will be to add something we forgot, such as
these timestamps, sometimes it will be to speed up the data transfer.
Once the BBS is online, microsat telemetry will probably be in binary,
and will be sent far less often. There will be a whole orbit data format,
probably similar to the UoSAT format.

This is not meant to scare anyone off from writing software to decode
microsat data, but be aware that things are in a state of flux. Make
you software modular and flexible. For example, with over 240 analog
telemetry values on four spacecraft, and 320 status bits, the best
thing to do is have your program read the telemetry equation files
sent out by Jan. Don't hard code the values in BASIC data statements,
as you'll have to do a lot of typing as these values get refined, defined,
or deleted.

Although the basic format of the basic telemetry will probably remain
chan:val, the order of the channels, and presence or absence of any
particular value is subject to change.

I'd like to suggest to the folks writing the all-singing all-dancing
telemetry display and archive software that they do the following:

1) Define a standard microsat telemetry file storage format. This
should be the raw telemetry count rather than converted, since the
equations may be adjusted, e.g., bat2 temp on dove. Write
the post-processing display, plot, and analysis software to run

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     off of the standard format.

  2) Write a telemetry capture program(s) to convert raw data into the
     standard storage format.  Some of the already captured data is
     in the N4HY format, some was dumped from monitor mode right into
     a file.

hp

Posted: Sun, Feb  4, 1990  10:22 PM GMT             Msg: HGJA-4160-5568
From:   AMSATDL
To:     AMSAT
Subj:   AO-13: Transponder Schedule to 09May90


AMSAT OSCAR-13 Transponder Schedule (valid until May 09)
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        Mode-B  : MA 000 to MA 165
        Mode-JL : MA 165 to MA 195
        Mode-S  : MA 195 to MA 200
        Mode-BS : MA 200 to MA 205
        Mode-B  : MA 205 to MA 256
        Omnis   : MA 240 to MA 060

However from the 21Feb90 to 21Mar90 there will be an
OFF period from MA 20 to MA 90 due to solar eclipses
affecting AO-13. The length of the eclipses vary from
12 to 89 minutes. There will be only Mode-B beacon
during the Mode-S from MA 195 to MA 200.
Spacecraft attitude on 03Feb90 was ALAT=207.1/ALON=+2.9,
which results in optimum Squint angle around MA200.

73s Peter  DB2OS
    Graham VK5AGR

sorry - please exchange ALAT with ALON in the text above


Posted: Sun, Feb  4, 1990  11:45 PM GMT             Msg: IGJA-4160-5779
From:   GNAKAYAMA
To:     AMSAT
CC:     DLOUGHMILLER
Subj:   Project OSCAR Annual Meeting

The 1990 annual meeting of Project OSCAR, Inc. was held on 27 January 1990
in Sunnyvale, California.

Elected to the Board of Directors for the 1990-92 term are:
        Cliff Buttschardt, W6HDO
        Ross Forbes, WB6GFJ
        Clif Keeley, WA6JWA
        Mike Marneris, K8ERL
        Nick Marshall, W6OLO
        Gary Nakayama, KH6JRB
        Jeffrey Pawlan, WA6KBL

Officers for 1990 are:
        Chairman of the Board - Gary Nakayama, KH6JRB
        President - Ross Forbes, WB6GFJ
        Treasurer - Gil Morris, WB6KCJ
        Secretary - Margaret Nakayama, KB6HWV

Special Directors are:
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        Technical Director - Jeffrey Pawlan, WA6KBL
        Director of User Services - Cliff Buttschardt, W6HDO

The BoD of Project OSCAR have expressed an increased interest in technical
projects.

P.S. Doug,  The following officers and board members of Project OSCAR
are on TELEMAIL:
        GNAKAYAMA      Gary Nakayama, KH6JRB, Chairman of the Board
        RFORBES        Ross Forbes, WB6GFJ, President
        CBUTTSCHARDT   Cliff Buttschardt, W6HDO, Dir of User Services
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